B3

John Craig - FYI
Alice/Shelley - log evaluate Draft stamp file

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
25 FUNSTON ROAD
KANSAS CITY, KANSAS 66115

January 8, 1985

MEMORANDUM

SUBJECT: Draft HRS - Wellman Dynamics Corporation
Creston, Iowa

FROM: Paul E. Doherty, Chief
SINV/EP&R/ENSV

TO: Robert L. Morby
Chief, WMBR/ARWM

THRU: William J. Keffer
Chief, EP&R/ENSV

John C. Wicklund
Director, ENSV

David A. Wagoner
Director, ARWM

Attached for your review is a draft HRS (11.36) for the above referenced facility.

If you have any questions or comments, please call me at 236-3888.

Attachment

ecology and environment, inc.

FAIRWAY WEST OFFICE BLDG., 4350 JOHNSON DRIVE, SHAWNEE MISSION, KANSAS 66205, TEL. 913-432-9961

International Specialists in the Environmental Sciences

MEMORANDUM

TO: Paul E. Doherty, ARPO

FROM: William Oberle, FIT

DATE: December 28, 1984

SUBJECT: Wellman Dynamics Corp. - Draft HRS Scoring
TDD# R-07-8411-20

Attached is the draft HRS scoring for the Wellman Dynamics Corp. of Creston, Iowa. The corporation as well as the past owners is engaged in the production of aluminum and magnesium castings for the aerospace industry. The former owners of the site disposed of 10,000 gallons of spent chromic, hydroflouric, nitric and sulfuric acids in a waste pit. The pit was filled with sand and capped with concrete in 1971.

The air route and fire and explosion hazards were not scored due to insufficient data. The direct contact score equalled 16.66. This reflects the potential for public contact with leachate seeps (if present) emanating downslope from the pit.

Information needed to properly assess the hazards include; 1) soil samples - total metals, pH from areas adjacent to pit; 2) groundwater samples from wells nearest to site upgradient and downgradient; 3) surface water samples from the Middle Platte River upgradient and downgradient, and 4) sediment or leachate samples from downgradient areas along the Middle Platte River.

WO:tr

Facility name: Wellman Dynamics Corp.

Location: Creston, Iowa.

EPA Region: VII

Person(s) in charge of the facility: Paul Breakenridge - Facility Engineer

515/782-8521; Ext. 282

James Howarth - owner

Name of Reviewer: W. Oberle Date: 12/28/84

General description of the facility:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

The site is currently owned by James Howarth of Custom Technologies. The plant is an aluminum and magnesium foundry which provides castings for the aerospace industry. Approximately 10,000 gallons of waste hydrofluoric, nitric, sulfuric and chromic acids were disposed of in a concrete lined pit onsite between 1965-71 by previous owners.

Scores: $S_M = 11.36$ ($S_{gw} = 19.1$ $S_{sw} = 4.69$ $S_a = 0$)

$S_{FE} = 0$

$S_{DC} = 16.66$

FIGURE 1
HRS COVER SHEET

Ground Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If observed release is given a score of 45, proceed to line 4. If observed release is given a score of 0, proceed to line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	0 1 (2) 3	2	4	6	
Net Precipitation	0 (1) 2 3	1	1	3	
Permeability of the Unsaturated Zone	0 (1) 2 3	1	1	3	
Physical State	0 1 2 (3)	1	3	3	
Total Route Characteristics Score			9	15	
3 Containment	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Toxicity/Persistence	0 3 6 9 (12) 15 18	1	12	18	
Hazardous Waste Quantity	0 1 (2) 3 4 5 6 7 8	1	2	8	
Total Waste Characteristics Score			14	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3	9	9	
Distance to Nearest Well/Population Served	0 4 6 8 10 / 12 16 18 (20) / 24 30 32 35 40	1	20	40	
Total Targets Score			29	49	
6 If line 1 is 45, multiply 1 x 4 x 5 / If line 1 is 0, multiply 2 x 3 x 4 x 5			10,962	57,330	
7 Divide line 6 by 57,330 and multiply by 100			S_{gw} = 19.121		

FIGURE 2
GROUND WATER ROUTE WORK SHEET

31.87

Surface Water Route Work Sheet						
Rating Factor	Assigned Value (Circle One)		Multi-plier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0)	45	1	0	45	4.1
If observed release is given a value of 45, proceed to line [4]. If observed release is given a value of 0, proceed to line [2].						
[2] Route Characteristics						4.2
Facility Slope and Intervening Terrain	0 (1) 2 3		1	1	3	
1-yr. 24-hr. Rainfall	0 1 (2) 3		1	2	3	
Distance to Nearest Surface Water	0 1 2 (3)		2	6	6	
Physical State	0 1 2 (3)		1	3	3	
Total Route Characteristics Score				12	15	
[3] Containment	0 1 2 (3)		1	3	3	4.3
[4] Waste Characteristics						4.4
Toxicity/Persistence	0 3 6 9 (12) 15 18		1	12	18	
Hazardous Waste Quantity	0 1 (2) 3 4 5 6 7 8		1	2	8	
Total Waste Characteristics Score				14	26	
[5] Targets						4.5
Surface Water Use	0 1 (2) 3		3	6	9	
Distance to a Sensitive Environment	(0) 1 2 3		2	0	6	
Population Served/Distance to Water Intake Downstream	(0) 4 6 8 10 12 16 18 20 24 30 32 35 40		1	0	40	
Total Targets Score				6	55	
[6] If line [1] is 45, multiply [1] x [4] x [5] If line [1] is 0, multiply [2] x [3] x [4] x [5]				3,024	64,350	
[7] Divide line [6] by 64,350 and multiply by 100			S_{SW} = 4.69			

FIGURE 7
SURFACE WATER ROUTE WORK SHEET 5.87

	s	s^2
Groundwater Route Score (S_{gw})	19.1	364.81
Surface Water Route Score (S_{sw})	4.69	21.99
Air Route Score (S_a)	0	0
$S_{gw}^2 + S_{sw}^2 + S_a^2$		386.80
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		19.66
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M =$		11.36

FIGURE 10
WORKSHEET FOR COMPUTING S_M

Air Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	5.1
Date and Location:					
Sampling Protocol:					
If line [1] is 0, the S_a = 0. Enter on line [5]. If line [1] is 45, then proceed to line [2].					
[2] Waste Characteristics					5.2
Reactivity and Incompatibility	0 1 2 3	1		3	
Toxicity	0 1 2 3	3		9	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
	Total Waste Characteristics Score			20	
[3] Targets					5.3
Population Within 4-Mile Radius	0 9 12 15 18 21 24 27 30	1		30	
Distance to Sensitive Environment	0 1 2 3	2		6	
Land Use	0 1 2 3	1		3	
	Total Targets Score			39	
[4] Multiply [1] x [2] x [3]				35,100	
[5] Divide line [4] by 35,100 and multiply by 100		S_a = 0			

FIGURE 9
AIR ROUTE WORK SHEET

Fire and Explosion Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Containment	1 3	1		3	7.1
2 Waste Characteristics					7.2
Direct Evidence	0 3	1		3	
Ignitability	0 1 2 3	1		3	
Reactivity	0 1 2 3	1		3	
Incompatibility	0 1 2 3	1		3	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
Total Waste Characteristics Score				20	
3 Targets					7.3
Distance to Nearest Population	0 1 2 3 4 5	1		5	
Distance to Nearest Building	0 1 2 3	1		3	
Distance to Sensitive Environment	0 1 2 3	1		3	
Land Use	0 1 2 3	1		3	
Population Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Buildings Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Total Targets Score				24	
4 Multiply 1 x 2 x 3				1,440	
5 Divide line 4 by 1,440 and multiply by 100		S_{FE} =			

FIGURE 11
FIRE AND EXPLOSION WORK SHEET

Direct Contact Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Incident	(0) 45	1	0	45	8.1
If line 1 is 45, proceed to line 4 If line 1 is 0, proceed to line 2					
2 Accessibility	0 1 (2) 3	1	2	3	8.2
3 Containment	0 (15)	1	15	15	8.3
4 Waste Characteristics Toxicity	0 1 2 (3)	5	15	15	8.4
5 Targets					8.5
Population Within a 1-Mile Radius	0 1 (2) 3 4 5	4	8	20	
Distance to a Critical Habitat	(0) 1 2 3	4	0	12	
Total Targets Score			8	32	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			3600	21,600	
7 Divide line 6 by 21,600 and multiply by 100			S_{DC} = 16.66		

FIGURE 12
DIRECT CONTACT WORK SHEET

August 16, 1982

FIT QUALITY ASSURANCE TEAM

DOCUMENTATION RECORDS
FOR
HAZARD RANKING SYSTEM

INSTRUCTIONS: As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference. Include the location of the document.

FACILITY NAME: Wellman Dynamics, Corp.

LOCATION: Creston, Iowa

DATE SCORED: December 28, 1984

PERSON SCORING: William Oberle

PRIMARY SOURCE(S) OF INFORMATION (e.g., EPA region, state, FIT, etc.):

EPA regional files, Iowa Geological files; Iowa Manufacturers Index; Iowa Academy of Sciences publications;

FACTORS NOT SCORED DUE TO INSUFFICIENT INFORMATION:

Air route, and fire and explosion hazards were not scored due to insufficient information.

COMMENTS OR QUALIFICATIONS:

GROUND WATER ROUTE

1. OBSERVED RELEASE None known as of this time. Score = 0

Contaminants detected (5 maximum):

Rationale for attributing the contaminants to the facility:

* * *

2. ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifer(s) of concern:

The alluvial aquifer is the aquifer of concern. This aquifer is found at depths of 20-30 ft. in areas near Creston, Iowa. (9) The Mississippian aquifer is the major deep aquifer at 1200-1300 (3,4,5)

Depth(s) from the ground surface to the highest seasonal level of the saturated zone [water table(s)] of the aquifer of concern:

Depth of the aquifer of concern is 20-30 feet. (9)

Depth from the ground surface to the lowest point of waste disposal/ storage:

The depth to the lowest point of waste disposal is 8 feet(5).

30ft - 8ft $\approx$ 24 feet in depth between wastes and aquifer of concern.

Score = 2

Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):
Average annual precipitation is 30 inches/year. (1)

Mean annual lake or seasonal evaporation (list months for seasonal):
Mean annual lake evaporation is 38 inches/year (2)

Net precipitation (subtract the above figures):

30-38 = -8 inches/year net precipitation

Score = 1

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Clarinda series soils are poorly drained and sloped from 5-14%. These soils are silty clay and clay combinations with a permeability of 0.06 inch/hour(5). The area surrounding Clarinda has unconsolidated clays, sands and gravels known as drifts which are of Kansan age(9).

Permeability associated with soil type:

Permeability is 4×10^{-5} cm/sec. or $<$ 0.06 inch/hour

Score = 1

Physical State

Physical state of substances at time of disposal (or at present time for generated gases):

All hazardous wastes disposed of were in liquid form (5,6)

Score = 3

* * *

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Method of containment was a pit or surface impoundment which was not lined and had no runon diversion structures. (4,5,6)

Method with highest score:

Method with highest scored was a surface impoundment with no liner and no runon diversion structures.
Score = 3

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:	Toxicity	Persistence
Hydrofluoric acid,	3	0
Sulfuric Acid	3	0
Nitric Acid	3	0
Chromic Acid (Chromium trioxide)	3	1

Compound with highest score:

Chromic acid had the highest score. (2,7)

Score = 12

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

Total waste quantity is 10,000 gallons (5).
10,000 gal ÷ 50 gal/drum = 200 drums

Score = 2
Basis of estimating and/or computing waste quantity:

EPA preliminary assessment was used to estimate waste quantity(5).

* * *

5. TARGETS

Ground Water Use

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

Shallow alluvial groundwater is the source of rural drinking and at times livestock water (9,,10)

Score = 3

Distance to Nearest Well

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

Within 1500-1800 ft. from site boundary are 3 farms which are reportedly not on city water (10,8).

Distance to above well or building:

The nearest farm is 1500 feet southeast of the site (8).

distance score = 4

Population Served by Ground Water Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

City water supply is from Green Valley and Summit Lakes(5). Rural water supplies approximately 60 farms (8).

60 x 3.8 person/house = 228 persons

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

No irrigation in county (10).

Total population served by ground water within a 3-mile radius:

Total is 228 persons. (pop. score = 2)

Matrix Score = 20

SURFACE WATER ROUTE

1. OBSERVED RELEASE

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

No observed release is known at present
Score = 0

Rationale for attributing the contaminants to the facility:

* * *

2. ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

30 ft. elevation ÷ 1500 ft. length = 2% slope (8)

Name/description of nearest downslope surface water:

Middle Platte River is the nearest surface water (8).

Average slope of terrain between facility and above-cited surface water body in percent:

50 ft. elevation ÷ 900 foot distance = 5.56% slope

Score = 1

Is the facility located either totally or partially in surface water?

No, it is not.

Is the facility completely surrounded by areas of higher elevation?

No, it is not. (8)

1-Year 24-Hour Rainfall in Inches

The rainfall is 2.5 inches (2).

Score =2

Distance to Nearest Downslope Surface Water

The distance to the nearest downslope water is 900 feet (8).

Score = 3

Physical State of Waste

Waste were all liquids (5,6).

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Same as Section 3.4 - surface impoundment with no liner and no diversion structures (5).

Method with highest score:

Same as Section 3.4 - (5)

Score = 3

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compounds(s) evaluated

Same as Section 3.4

Compound with highest score:

Same as Section 3.4 (2,7)

Chromic acid scores same. Tox = 3; persistence = 1
Score = 12

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

Same as Section 3.4. - 200 drums.

Score = 2

Basis of estimating and/or computing waste quancity:

EPA preliminary assessment was used. (5).

* * *

5. TARGETS

Surface Water Use

Use(s) of surface water within 3 miles downstream of the hazardous substance:

The only surface water use would be for local fishing and boating recreations.(5)

Score = 2

Is there tidal influence?

There is no tidal influence.

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

There are no known critical environments affected (5).

Score = 0

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

NA

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

NA

Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

There are no known water supply intakes within three miles downstream. (5,8).

Score = 0

Computation of land area irrigated by above-cited intake(s) and conversion to population (1.5 people per acre):

No irrigation in the county. (10).

Score = 0

Total population served:

NA

Name/description of nearest of above water bodies:

NA

Distance to above-cited intakes, measured in stream miles.

NA

AIR ROUTE

1. OBSERVED RELEASE — No releases are known to date. (5).

Contaminants detected:

Date and location of detection of contaminants:

Methods used to detect the contaminants:

Rationale for attributing the contaminants to the site:

* * *

2. WASTE CHARACTERISTICS — Not applicable at this time.

Reactivity and Incompatibility

Most reactive compound:

Most incompatible pair of compounds:

Toxicity

Most toxic compound:

Hazardous Waste Quantity

Total quantity of hazardous waste:

Basis of estimating and/or computing waste quantity:

* * *

3. TARGETS Not applicable at this time.

Population Within 4-Mile Radius

Circle radius used, give population, and indicate how determined:

0 to 4 mi 0 to 1 mi 0 to 1/2 mi 0 to 1/4 mi

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

Distance to critical habitat of an endangered species, if 1 mile or less:

Land Use Not applicable at this time.

Distance to commercial/industrial area, if 1 mile or less:

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

Distance to residential area, if 2 miles or less:

Distance to agricultural land in production within past 5 years, if 1 mile or less:

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

Is a historic or landmark site (National Register or Historic Places and National Natural Landmarks) within the view of the site?

FIRE AND EXPLOSION

1. CONTAINMENT Not applicable at this time.

Hazardous substances present:

Type of containment, if applicable:

* * *

2. WASTE CHARACTERISTICS Not applicable at this time.

Direct Evidence

Type of instrument and measurements:

Ignitability

Compound used:

Reactivity

Most reactive compound:

Incompatibility

Most incompatible pair of compounds:

* * *

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility:

Basis of estimating and/or computing waste quantity:

* * *

3 TARGETS Not applicable at this time.

Distance to Nearest Population

Distance to Nearest Building

Distance to Sensitive Environment

Distance to wetlands:

Distance to critical habitat:

Land Use

Distance to commercial/industrial area, if 1 mile or less:

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

Distance to residential area, if 2 miles or less:

Distance to agricultural land in production within past 5 years, if 1 mile or less:

Distance to prime agricultural land in production within past 5 yearss, if 2 miles or less:

Is a historic or landmark site (National Register or Historic Places and National Natural Landmarks) within the view of the site?

Population Within 2-Mile Radius

Buildings Within 2-Mile Radius

DIRECT CONTACT

1. OBSERVED INCIDENT

Date, location, and pertinent details of incident:

None known as of this time.

* * *

2. ACCESSIBILITY

Describe type of barrier(s):

Site is fenced but no security guard is used. (5). Score = 2

* * *

3. CONTAINMENT

Type of containment, if applicable:

Pit was lined and capped with 6 inches of concrete. Because of the acids deposited within the pit, the potential for leachate seeps is high. Therefore, score = 15

* * *

4. WASTE CHARACTERISTICS

Toxicity

Compounds evaluated:

Chromic, hydrofluoric, sulfuric and nitric acids were evaluated.

Compound with highest score:

All compounds were of equal toxicity (2,7)

Socre =3

* * *

5. TARGETS

Population within one-mile radius

Approximately 10% of the population of Creston lives or works within 1 mile of the site (5,8). 8429 x 0.10 = 849 persons.

Score = 2

Distance to critical habitat (of endangered species)

There is no known critical habitats within one mile of the site (5). Score = 0

REFERENCES

1) Horick, Paul J., Ed. 1976. Water resources of Iowa from the Symposium at the University of Northern Iowa; Cedar Falls, Iowa (4/18/69). Iowa Academy of Science; University Printing Service; Iowa City, Iowa; 2nd edition.

2) Mitre Corporation. 1982. Uncontrolled hazardous waste site ranking system. McLean, VA.

3) Telephone conversation with Paul Van Dorpe, Iowa Geological Survey; conducted by W. Oberle - FIT; 11/14/84.

4) Horick, P.J. and W.L. Steinhilber. 1973. Mississippian aquifer of Iowa. Iowa Geological Survey; Map Series 3.

5) Lawver, Ken. 1983. Preliminary assessment for Wellman Dynamics Corporation; Hwy. 34 east; Creston, Iowa. U.S. Environmental Protection Agency; Emergency Planning and Response Branch; Region VII.

6) EPA Notificiation of Hazardous Waste Site. EPA Form 8900-1; submitted by Wellman Dynamics Corp.; 6/9/81; James Howarth, executive vice-president and owner.

7) Merck Index. 1976. M. Windholz, Ed.; Merck and co., Inc, 9th Ed.; Rahway, NJ.

8) U.S.G.S. Topographic Maps; Creston, East and West, Iowa quadrangles; 7.5 minute scale; 1980.

9) Underground water resources of Iowa. 1912. Iowa Geological Survey Bulletin AR-21; Union County, Iowa by Howard E. Simpson. pp986-990

10) Telephone interview with Mr. Jerry Frank - Agricultural Stabilization and Conservation Service; USDA; conducted by William Oberle, FIT/VII; 12/27/84.